

# **In the United States Patent and Trademark Office**

In re the Application of:

Leslie Ernest )

Serial Number: 10/824,808 )

Group: 3624

Docket Number: AUS920040042US1 )

Examiner: Miller, Alan S.

Filed on: 04/15/04 )

For: System and method for rating )

performance of computing grid service )

providers )

## **APPEAL BRIEF**

### ***Real Party in Interest per 37 CFR §41.37(c)(1)(i)***

The subject patent application is owned by International Business Machines Corporation of Armonk, NY.

### ***Related Appeals and Interferences per 37 CFR §41.37(c)(1)(ii)***

This patent application is related to pending application 10/870,522, our docket AUS920040044US1, filed on June 6, 2004, by Craig Fellenstein, which is currently under appeal with Appellant's Reply Brief due October 19, 2010. No decision has been rendered by the BPAI in this related application.

### ***Status of Claims per 37 CFR §41.37(c)(1)(iii)***

The final rejections of Claims 14, 40 and 41 are appealed. Claims 1 - 13, 15 - 19 and 42 - 43 have been previously cancelled.

### ***Status of Amendments after Final Rejections per 37 CFR §41.37(c)(1)(iv)***

An after-final amendment was filed on July 28, 2010, which was entered by the Examiner on August 5, 2010.

***Summary of the Claimed Subject Matter per 37 CFR §41.37(c)(1)(v)***

Grid computing is a computing environment and paradigm which involves advanced and complex management of networked computing resources to assign jobs and parts of jobs to available computing resources, while maintaining certain performance levels according to technical and business requirements. The National Institute of Standards and Technology has developed a working definition as being distributed parallel processing across a network, having as a key concept the ability to negotiate resource-sharing arrangements. Characteristics of grid computing are it coordinates independent resources, uses open standards and interfaces, assures quality of service, allows for heterogeneity of computers, provides distribution across large geographical boundaries, and employs loose coupling of computers. (Source: "Effectively and Securely Using the Cloud Computing Paradigm" by Peter Mell and Tim Grance, NIST, Information Technology Laboratory, presentation on 10-7-2009, retrieved on 10-12-2010 from <http://csrc.nist.gov/groups/SNS/cloud-computing/cloud-computing-v26.ppt>).

The present invention pertains to a grid computing job scheduling process for Online Transaction Processing ("OLTP") jobs in which a customer's Service Level Agreement (SLA) is automatically compared to the historical ability of a candidate resource to meet processing requirements. If the historical ability of the candidate resource indicates that it usually meets appropriate SLA requirements, then a new OLTP job for the customer is assigned to the candidate resource, otherwise, another resource in the grid is considered. During the decision process, "self-reports" from each resource are considered which contain each resource's own historical performance statistics.

Claim 14 is directed to a computer-implemented method according to the present invention (paragraph numbers refer to the numbering as it appears in the pre-grant publication of the patent application) (emphasis added by Appellant):

Table: Disclosure Support for Claim 14

|  |   |
|--|---|
| 14. A computer-implemented grid computing control method comprising:   |   |
| receiving by a grid computing control system one or more grid resource self-reports from one or more self-reporting computing resources in a grid computing environment;   | See Abstract and items 61 and 62 in Fig. 6.<br>[0050] The rating logic (62) obtains real-time data from grid resources (54) in <u>self-reported job statistics</u> (61), . . .  |
| receiving by the grid computing control system one or more job results from a grid resource job results manager system corresponding to jobs completed by the self-reporting grid computing resources;   | See item 45 in Fig. 6.<br>[0040] Turning now to FIG. 4, . . . the <u>completion statistics (45)</u> , from the Job Results Manager (302) are preferably available to the JGS (34), as well.<br>[0050] The rating logic (62) <u>obtains . . . statistics (45) reported from the Results Manager</u> , . . .  |
| analyzing by the grid computing control system the received job results and the received self-reports against client-driven Service Level Agreement performance requirements corresponding to the completed jobs and determining one or more sub-ratings selected from a group comprising percentage of jobs completed, percentage of jobs completed within specified time constraints, an interactiveness rating, and a cost compliance rating; | See item 62 in Fig. 6.<br>[0051] The GRRL (62) automatically <u>compares job processing data for each job and each resource against related SLA criterion</u> to determine if contractual agreements were met.  |
| producing and updating a grid resource rating table having the sub-ratings according to a weighted analysis of the sub-ratings for each resource vendor;   | See Fig. 2.<br>[0051] . . . A <u>Grid Vendor Rating Table (43) is created</u> containing the results of the analysis (or updated to contain the results of the most recent analysis) . . . This table . . . is preferably provided in a machine readable format as well, such as a data file (CSV, binary, DB2, HTML, XML, etc.).<br>.<br>[0053] Further, the overall vendor rating (27) is preferably determined . . . by <u>applying a weighting scheme</u> to the individual analysis results in order to prioritize certain performance characteristics as needed according to a client's requirements, or according to a grid performance objective. . . . |
| subsequently selecting by the grid computing control system an available grid resource server in the grid computing environment from a plurality of available grid resource servers according to the grid resource rating table; and   | [0091] The present invention enhances the ability of clients to request specific grid vendors who have <u>historically performed</u> according to a client's preferences, and enhances a grid computing control system's ability to <u>select grid resources and vendors for job assignment who have historically performed according to performance requirements</u> .   |

|   |   |
|---|---|
| <p>assigning a subsequently requested job to the selected grid resource server wherein the selection and assignment is performed according to historical performance against client-driven performance requirements per the grid resource rating table.</p> | <p>[0036] Once the GMS <u>determines a specific vendor(s) (38, 39, 300) to which the job will be assigned</u> (or among which the job will be divided), requests are sent to the selected grid resources, such as Server 1 (38). Server 1 (38) would then process the job as required, and would return job results, such as a terrorist name list, back to the requesting client (53), such as the FBI analyst, via the communications network (51).</p> <p>...</p> <p>[0038] A Job/Grid Scheduler ("JGS") (34) ... selects which server or servers (28, 29, 300) to assign to process the job (32). In this illustration, Server 2 (39) has been selected, so <u>the job (32) is transferred</u> to Server 2' job queue (36) to be processed when the server becomes available (immediately if adequate processing bandwidth is already available). ...</p> |
|---|---|

Similarly, Claim 40 is directed to computer program products according to the invention:

a computer readable storage medium {¶¶0068, 0070};

first program instructions to receive by a grid computing control system one or more grid resource self-reports from one or more self-reporting computing resources in a grid computing environment {Abstract; #61, 62 in Fig. 6; ¶0050};

second program instructions to receive by the grid computing control system one or more job results from a grid resource job results manager system corresponding to jobs completed by the self-reporting Online Transaction Processing computing resources {#45 in Fig. 6; ¶0040};

third program instructions to analyze by the grid computing control system the received job results and the received self-reports against client-driven Service Level Agreement performance requirements corresponding to the completed jobs and determining one or more sub-ratings selected from a group comprising percentage of jobs completed, percentage of jobs completed within specified time constraints, an interactivity rating, and a cost compliance rating {62 in Fig. 6. ¶0051};

fourth program instructions to produce and update a grid resource rating table having the sub-ratings according to a weighted analysis of the sub-ratings for each resource vendor {Fig. 2., ¶¶0051, 0053};

fifth program instructions to, subsequently, select by the grid computing control system an available grid resource server in the grid computing environment from a

plurality of available grid resource servers according to the grid resource rating table {¶0091}; and

sixth program instructions to assign a subsequently requested job to the selected grid resource server wherein the selection and assignment is performed according to historical performance against client-driven performance requirements per the grid resource rating table {¶0037, 0038};

wherein the first, second, third, fourth, fifth and sixth program instructions are stored on the computer readable storage medium {¶0068, 0070}.

Likewise, Claim 41 is directed towards system embodiments according to the invention:

a grid computing controller selected from a group comprising a microprocessor, programmable logic circuit, and custom integrated circuit, configured to perform a logical process of automatically dynamically assigning an Online Transaction Processing job to an available grid resource server based upon historical performance against grid processing job requirements driven by a client;

receiver portion of the grid computing controller receiving one or more grid resource self-reports from one or more self-reporting computing resources in a grid computing environment {Abstract; #61, 62 in Fig. 6; ¶0050};

a Service Level Agreement accesser portion of the grid computing controller accessing one or more Service Level Agreements associated with the client {62 in Fig. 6.; ¶0051};

a job results receiver portion of the grid computing controller receiving one or more job results from a grid computing environment job results manager system {#45 in Fig. 6; ¶0040};

an analyzer portion of the grid computing controller, responsive to completion of an Online Transaction Processing job by a particular grid resource server, analyzing received job results and received self-reports from the particular grid resource server against the accessed Service Level Agreement, including determining one or more sub-ratings selected from a group comprising percentage of jobs completed, percentage of jobs completed within specified time constraints, an interactiveness rating, and a cost compliance rating {62 in Fig. 6.; ¶0051};

- a report producer portion of the grid computing controller subsequently producing and updating a grid resource rating table having the sub-ratings according to a weighted analysis of the sub-ratings for each resource vendor {Fig. 2., ¶¶0051, 0053}; and
- a selector/assigner portion of the grid computing controller selecting an available grid resource server in the grid computing environment from a plurality of available grid resource servers according to the grid resource rating table, and assigning a subsequently requested job to the selected grid resource server {¶¶0037, 0038, 0091}.

***Grounds for Rejection For Which Review is Sought per 37 CFR §41.37(c)(1)(vi)***

Appellant respectfully request review and reversal of the rejections of Claims 14, 40 and 41 under 35 U.S.C. §103(a) over AI-Theneyan *et al.*("A Policy-Based Resource Brokering Environment for Computational Grids" (2002) Ph.D. dissertation, Old Dominion University, hereinafter AI-Theneyan) in view of Official Notice.

*Arguments per 37 CFR §41.37(c)(1)(vii)*Rejections under AI-Theneyan in view of Official Notice

Appellant respectfully submits that errors in examination here are several, but most importantly, are:

- (a) Failing to adequately support Official Notice after reasonable challenge from the Appellant, and thus relying upon unsubstantiated and conclusory statements for the final rejections; and
- (b) Reading Appellant's claims and disclosure into the AI-Theneyan reference improperly.

Error: Failing to Adequately Support Official Notice

Improper Official Notice. In the reasons for the final rejection (pg. 2 of the Office Action), the Examiner has held that Appellant has not traversed the Examiner's Official Notice of "old and well known aspects" of the claim:

In the prior Office Action, the Examiner took Official Notice that "that determining ratings of actual performance versus expected performance for attributes such as turnaround time was Old and Well Known at the time of the invention ", and that "that a table of vendors ranked according to certain criteria was Old and Well Known at the time of the invention". The MPEP states "To adequately traverse such a finding, an applicant must specifically point out the supposed errors in the examiner's action, which would include stating why the noticed fact is not considered to be common knowledge or well-known in the art." (emphasis added) (see MPEP 2144.03). Therefore the Applicant has failed to adequately traverse the Examiner's use of Official Notice. . . .



Please note that there is no explanation of how Applicant's traversal was inadequate, or if the Examiner considers that there was no traversal at all. Appellant respectfully submits that because the final rejections depend heavily on the Official Notice, then an error has occurred for failing to clearly articulate the reasons for the rejections when the nature of the background art is complex.

Appellant has traversed the Official Notice in two manners. The Official Notice in question and the Al-Thenyan references first appeared on page 13 in the third Office Action on the merits, mailed on September 25, 2009, in conjunction with a rejection under 35 U.S.C. §103(a) as follows (emphasis added by Appellant):

- "15. Claims 14 and 40-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Al-Thenyan, Ahmed Hamdan, ("A Policy-Based Resource Brokering Environment for Computational Grids" (2002) Ph.D. dissertation, Old Dominion University, United States-Virginia; hereinafter Al-Thenyan) in view of Official Notice.

However, the term "Official Notice" does not appear anywhere else in this Office Action, but the following reasons appear to be, but are not clearly stated as the Examiner's intent to properly make Official Notice (emphasis added by Appellant):

"Al-Thenyan does not explicitly disclose determining one or more sub-ratings selected from at least one of (i.e. a group comprising of) percentage of jobs completed, percentage of jobs completed within specified time constraints, an interactiveness rating, and a cost compliance rating.

Examiner notes that determining ratings of actual performance versus expected performance for attributes such as turnaround time (i.e. disclose determining one or more subratings selected from a group comprising percentage of jobs completed within specified time constraints), was Old and Well Known at the time of the invention (see at least Benjamin et al. (U.S. Patent Publication 2002/0107723), Tables 1 -7 and ¶0050)."

And, again at:

"Al-Theneyan also does not explicitly disclose producing and updating a grid resource rating table having said sub-ratings rank-ordered according to a weighted analysis of said subratings for each resource vendor.

Examiner notes that a table of vendors ranked according to certain criteria was **Old and Well Known** at the time of the invention (see at least Shoquist et al. (U.S. Patent 5,361,199), column 6, lines 50-59, FIG. 10)."

Given the unusual wording of these two passages, Appellant respectfully submits that it was unclear whether Benjamin and Shoquist were being officially included in the rejections under 35 U.S.C. § 103(a), or not.

In response to this initial appearance of Official Notice in non-final rejections in the third Office Action on the merits, Appellant proceeded with best efforts to address the Examiner's arguments in a reply filed on January 25, 2010, as follows:

"Regarding the rejections under 35 U.S.C. § 103(a) over newly-cited Al-Theneyan in view of newly-cited Office Notice, we respectfully disagree with the Examiner's conclusions. . . "

Here, the Appellant has clearly disagreed with, e.g. "traversed" whereas traverse is synonymous with disagree, the application of both the newly-cited Al-Theneyan reference and the Official Notice.

So, Appellant met the first requirement to traverse the Official Notice, but did the Appellant support that traversal with argument and/or evidence to the contrary of the holding? For this answer, one must only look at the first two Office Actions on the merits. The Board will notice that the Benjamin and Shoquist references had previously been applied *directly* as a primary reference and as a secondary reference, respectively, in rejections under 35 U.S.C. § 103(a) in the first Office Action on the merits, dated October 1, 2008, and again in the second Office Action on the merits, dated May 7, 2009.

In response to each of these sets of rejections, the Appellant responded with argument in which Appellant disagreed with (e.g. traversed) the Examiner's interpretation and application of the Benjamin and Shoquist references, and provided both rationale why the references did not anticipate the elements of the claims as argued by the Examiner, and included extrinsic evidence.

In review of the full progression of the examination of these claims, the Examiner initially relied upon the Benjamin and Shoquist references directly in rejections under 35 U.S.C. §103(a), but, following Appellant's replies and challenges to these references and their teachings, the Examiner demoted those references to mere evidence of old and well known art, and replaced them with Al-Theyan (as the primary reference) and Official Notice. Appellant did not agree, and does not agree, that Benjamin and Shoquist show what the Examiner has interpreted them to show, nor does the Appellant agree that Benjamin and Shoquist provides proper evidence of old and well known art as held in the Official Notice.

Appellant respectfully submits that this tactic of withdrawing references under challenge and then replacing them with Official Notice is improper and fundamentally unfair. If sanctioned by the Board, this type of examination tactic would allow any examiner who could not substantiate a rejection under 35 U.S.C. §103(a) using actual references to simply replace them with examiner opinion backed up by the improperly applied prior art as evidence of "that sort of thing".

More particularly, however, is that in this instant patent application, the Appellant's previously-made arguments against the Benjamin and Shoquist references stand as reasons and arguments to support a traversal of the Official Notice which seeks to gloss over the deficiencies in their teachings.

Even more persuasive of the Appellant's position is that following the Appellant's second challenge to these references, the Examiner showed agreement with the Appellant's arguments by withdrawing the rejections from direct use in the rejections under 35 U.S.C. §103(a). If Appellant's arguments at that time had not been persuasive, why then did the Examiner withdraw them and replace them with Al-Theneyan and Official Notice?

Appellant respectfully submits that not only was this improper examination procedure, but it amounts to an error in examination for finally rejecting claims over unsubstantiated Official Notice.

Teachings of Benjamin. The Examiner has agreed on page 10 of the final rejections that:

"Al-Theneyan does not explicitly disclose determining one or more sub-ratings selected from at least one of (i.e. a group comprising of) percentage of jobs completed, percentage of jobs completed within specified time constraints, an interactiveness rating, and a cost compliance rating."

Appellant agrees with this holding by the Examiner. However, the Examiner has stated that the Benjamin reference is evidence that "determining one or more sub-ratings selected from at least one of (i.e. a group comprising of) percentage of jobs completed, percentage of jobs completed within specified time constraints, an interactiveness rating, and a cost compliance rating" was old and well known in the art at the time of the Appellant's invention:

Examiner notes that determining ratings of actual performance versus expected performance for attributes such as turnaround time (i.e. disclose determining one or more subratings selected from a group comprisingpercentage ofjobs completed within specJied time constraints), was Old and Well Known at the time of the invention (see at least Benjamin et al. (U.S. Patent Publication 200210 107723), Tables 1 - 7 and 70050).

Benjamin was relied upon in the first Office Action on the merits as the primary reference for rejections under 35 U.S.C. §103(a), in response to which Appellant argued in a reply filed on February 2, 2009:

Excerpt of Appellant's Reply on Feb. 2, 2009

Benjamin, Jain and Shoquist are also silent regarding determining sub-ratings selected from a group comprising percentage of jobs completed, percentage of jobs completed within specified time constraints, an interactiveness rating, and a cost compliance rating. It was held that Benjamin teaches a sub-rating based on results accuracy, which we have deleted from the presented Markush group. Results accuracy is not the same as percentage of jobs completed, percentage of jobs completed withinspecified time constraints, an interactiveness rating, or a cost compliance rating.

Please note also that we have amended the second element of Claim 14 to include a functional responsive link between the first element and the second element which is not taught by either Jain or Benjamin. While Jain and Benjamin are held to teach these elements and limitations separately and in different relationships to each other, neither Jain nor Benjamin teaches this functional relationship between these two steps.

For these reasons, we respectfully request allowance of Claim 14.

The Examiner maintained the rejections over Benjamin with the same reasoning and interpretation in the second Office Action, making the rejections final. In a Request for Continued Examination, the Appellant continued to argue against the Examiner's interpretation of Benjamin as follows:

Excerpt from Appellant's Reply filed on Aug. 7, 2009

The Benjamin reference is not directed towards service providers in a computing grid, but instead to "service providers" as "trading partners". Such "trading partners" are not computing resources in a computing grid, but instead are companies with whom a customer may want to "trade". Companies and computers are not the same, of course. Benjamin compares their automatically generated trading partner rating system to eBay's sellers' ratings, Moody's and Standard & Poor's debt ratings for companies (¶¶0003 - 0005).

For these reasons, we respectfully submit that since the technical operations related to executing computing jobs in a grid computing environment is unlike selecting a trading partner to perform a business job of a non-computing type, the Benjamin reference is not taken from analogous art and does not teach automatic rating generation of grid computing resources and computers.

Appellant respectfully points out that, without explanation, the Examiner did not repeat the rejections over Benjamin in the third Office Action, but instead made rejections over newly-cited AI-Theneyan in view of Official Notice, wherein the Benjamin reference was used as evidence of old and well known prior art.

Appellant respectfully submits that the Examiner implicitly agreed with the Appellant's arguments and withdrew the Benjamin reference as applied in the first two Office Actions. Using Official Notice to anticipate those claim elements and pointing to Benjamin as evidence of that type of old and known technology does not cure the defect in the rejection whereas Benjamin obviously *does not* teach these elements or there would have been no reason to withdraw the rejections over Benjamin. As such, Appellant respectfully request reversal of the rejections of Claims 14, 40 and 41 due to the error in relying upon improper and unsubstantiated Official Notice.

Teachings of Shoquist. The Examiner has agreed on page 11 of the final rejections that:

Al-Theneyan also does not explicitly disclose producing and updating a grid resource rating table having said sub-ratings rank-ordered according to a weighted analysis of said subratings for each resource vendor.

Examiner notes that a table of vendors ranked according to certain criteria was Old and Well Known at the time of the invention (see at least Shoquist et al. (U.S. Patent 5,361,199), column 6, lines 50-59, FIG. 10).

Shoquist was relied upon in the first Office Action on the merits as a secondary reference for rejections under 35 U.S.C. § 103(a), in response to which Appellant argued in a reply filed on February 2, 2009, as shown in the foregoing excerpt. Similar to the consideration of the Benjamin reference, the Examiner maintained the same rationale and interpretation of the Shoquist reference in the final rejections set forth in the second Office Action on the merits. However, after Appellant replied as shown in the foregoing excerpt, the Examiner also withdrew Shoquist as a secondary reference under 35 U.S.C. § 103(a) and replaced it with Official Notice using Shoquist as evidence of old and well known art.

Likewise, Appellant respectfully submits that the Examiner implicitly agreed with the Appellant's arguments and withdrew the Shoquist reference as applied in the first two Office Actions. Using Official Notice to anticipate those claim elements and pointing to Shoquist as evidence of that type of old and known technology does not cure the defect in the rejection whereas Shoquist obviously *does not* teach these elements or there would have been no reason to withdraw the rejections over Benjamin. As such, Appellant respectfully request reversal of the rejections of Claims 14, 40 and 41 due to the error in relying upon improper and unsubstantiated Official Notice.

Error: Reading Appellant's Disclosure into the Al-Theneyan Reference

In the third Office Action on the merits, the rejections under 35 U.S.C. §103(a) over Benjamin in view of Shoquist and other references were withdrawn and replaced with rejections under 35 U.S.C. §103(a) over Al-Theneyan in view of Official Notice. This was the first time Al-Theneyan was applied in rejections in this application.

Appellant replied by pointing out that Al-Theneyan's disclosed methods for selecting a grid resource to which a new processing job would be assigned are based not on historical performance ratings as Appellant has claimed, but instead Al-Theneyan's method queues new jobs to resources based on the current "status" (e.g. availability) of resources compared to job criteria (emphasis added by Applicant):

Al-Theneyan Pg. 27, lines 1 - 2:

... A **ranking mechanism**, based on the application constraints, is used to **select the best resource when multiple resources satisfy the request**.

Appellant noted that their "ranking mechanism" and "ranks" are not described in any further detail in Al-Theneyan's disclosure. Appellant went further, by discussing this passage from Al-Theneyan:

Al-Theneyan Pg. 29, lines 15 - 16:

... The user **selects a resource based on the availability at the job preparation time**, ...

Appellant suggested that "at the job preparation time" should be interpreted as "current", not historical as Appellant has disclosed and claimed in the manner of using past records of meeting requirements.



Appellant also discussed this passage:

Al-Theneyan Pg. 47, line 9:

... A queuing algorithm selects the next job to schedule.

Appellant suggested that "queuing algorithm" is reasonably interpreted as being different than a selection algorithm using historical performance, as in Appellant's disclosure. But, Appellant pointed out that Al-Theneyan does disclose some history records, but not relative to completion of jobs according to requirements, instead, relative to predicted computing loads:

Al-Theneyan Pg. 48 lines 21 - 22:

... To support prediction, the *Resource Repository* keeps some historical performance information about the resources. ...

Al-Theneyan Pg. 60 line 10:

\* resource load is predictable;

Al-Theneyan Pg. 85 lines 25 - 27:

... For example, in [105], all resources are assumed to be dedicated and their loads are predictable, and tasks are assumed to be profiled where resource usage can be estimated in advance.

Appellant continued discussing Al-Theneyan's disclosure regarding selection of resources to which to assign a new processing job, and asked the Examiner to consider:

Al-Theneyan Pg. 70 last paragraph:

... The Scheduler Agent uses a queuing algorithm to select the next job to schedule. ...

Al-Theneyan Pg. 85 lines 1 - 2:

... Scheduler Agent that in turns uses an underlying queuing algorithm to select the next job to schedule.

Appellant also argued that probably the most conclusive supporting citation from Al-Theneyan of Appellant's interpretation of their selection process or mechanism appears in their section entitled "Future Work":

Al-Theneyan Pg. 169 lines 14 - 28:

#### **8.2 Future Work**

There are several areas of research that can be further explored. . . .

Also, for efficient scheduling of resources, it is more useful for PROBE to use an estimate of the performance in the near future rather than current performance. Based on historical performance information, PROBE should be able to predict the performance each resource is going to deliver at the time of the allocation. This could result in a more efficient scheduling of the resources. Thus, another direction for future research is to extend the model of PROBE given in this thesis to handle predictions. . . .

Appellant submitted that a reasonable interpretation of Al-Theneyan's disclosure is that it is a doctoral thesis, not an issued patent, and as such, does not enjoy the presumption of enablement as issued patents do. And, Appellant submitted that open-ended statements regarding intention to "explore" or "research further" are not statements which either (a) indicate Al-Theneyan completed or (b) knew how to complete such a job assigner which would assign jobs to grid resources based on historic performance. As such, they have seen the need for *potentially* doing this, so Al-Theneyan discloses collecting "*some* historical information", but Al-Theneyan gives no details of what type or specifics of historical information. Al-Theneyan is especially silent regarding how to utilize this generic historical information to affect selection of grid resources. For this reason, Appellant argued that Al-Theneyan in view of Official Notice fails to teach or suggest, in an enabling manner, all of our claim steps, elements, and limitations, whereas we specifically claim:

assigning a job to said selected grid resource server *wherein said selection and assignment is performed according to historical performance* against client-driven performance requirements per said grid resource rating table.

For these reasons, Appellant requested allowance of the claims.

However, in the fourth Office Action, the Examiner made the rejections final over Al-Theneyan in view of Official Notice. Regarding Appellant's arguments concerning the proper interpretation of Al-Theneyan's disclosure and its enablement, the Examiner has made several new arguments.

- (1) Al-Theneyan's Ranking Mechanism. The Examiner noted that this argument by Appellant was not clear as to its relevance to the issue at hand, whereas the term "ranking" is not in Appellant's claims and is not relied upon for the Examiner's rejections.

Appellant's Response: Cited references are relevant for all that they teach, not just the portions upon which rejections are made. By considering the rest of Al-Theneyan's disclosure, such as their ranking process and disclosure, one comes to a more accurate interpretation of Al-Theneyan's disclosure without prejudicing the interpretation with the knowledge of Appellant's claims. To ignore portions of Al-Theneyan's disclosure which would cast a different interpretation on the portions which are relied upon for the rejections is improper and an error in examination. Appellant respectfully submits that Al-Theneyan does not teach, *"... said selection and assignment is performed according to historical performance"* as proposed by the Examiner, but instead teaches job assignment by queuing and ranking, not rating, the resources according to availability, not according to historical performance.

- (2) Resource Selection by Availability. The Examiner has disagreed in the final rejections with Appellant's interpretation of Al-Theneyan's selection of a resource "at the job preparation time" as meaning "according to current availability", not historical ability to meet job requirements. The Examiner stated that this was not relied upon in the rejection. Similarly to point (1) above, Appellant respectfully submits that selective use and interpretations of passages from Al-Theneyan in a manner which is not consistent with the rest of the Al-Theneyan disclosure is improper reading of Appellant's disclosure into the prior art. The Examiner's

statement regarding Al-Theneyan's disclosure of a "better alternative" provides no further relevant reasoning about how selection at job preparation time could somehow be considered to mean "according to historical performance".

- (3) Queuing of Jobs and Load Prediction. With regard to Appellant's argument that queuing is not the same as selection according to historical performance, the Examiner has disagreed in the final rejections, and held that Appellant's arguments fail to meet 37 CFR §1.111(b) for being a general allegation without specifics. Appellant respectfully submits that the many citations to both the Al-Theneyan disclosure and Appellant's own disclosure, with intervening arguments and statements, amounts to more than a general allegation.

Further, Examiner has taken a strange position regarding Appellant's point that Al-Theneyan uses a *prediction* of load in their queuing mechanism, but Appellant has claimed use of *historical* performance in pages 15 - 18 of the Appellant's reply to the third Office Action. Using the common definitions of "prediction" and "historical", it is plain to see that a prediction deals with the future, while history deals with the past. Instead, however, the Examiner has concluded in contravention to the ordinary meaning of "prediction" and "historical" the following:

Examiner notes that the section that Applicant refers to make the case that the prediction is 'load prediction', page 60, line 10, reads "Most of the existing efforts suffer from limitations such as: . . . resource load is predictable". This is not evidence that 'prediction here is referring to 'load prediction', which is not the same as selection of a resource based on historical performance'.

Clearly, the term "resource load is predictable" means "load prediction", and the Examiner's interpretation that "prediction" is not referring to "load prediction" is unfounded and unsupported by the reference and by ordinary meanings of the terms.

- (4) Enablement of Al-Theneyan. At least a portion of the Examiner's reasons for rejection rely upon a section of Al-Theneyan's disclosure entitled "Future Work". In response to Appellant's argument that such text in a doctoral thesis amounts to an invitation to explore but does not enjoy a presumption of enablement such as a patent disclosure would, the Examiner has cited several portions of MPEP 2121. Please note that the Examiner has not argued that the disclosure is enabling in the Examiner's opinion, nor has the Examiner argued that such a disclosure of possible future work is itself enabling.

Regarding the first MPEP paragraph cited (section I), this paragraph requires that the relied upon reference expressly anticipate (e.g. disclose) or make obvious the claim elements, which Al-Theneyan does not as established in the foregoing paragraphs.

Regarding the second MPEP paragraph cited (section II), this paragraph must not be interpreted that regardless of where the reference comes from (patents, printed disclosure), they are always presumed to be enabling. This MPEP paragraph requires that the "level of disclosure required within a reference" is the same no matter the source or type of the document. The *same* as what? As is required under 35 U.S.C. 112, first paragraph. There is no other enablement requirement.

As Al-Theneyan's disclosure is a doctoral thesis, it has not been examined and determined to be compliant with 35 U.S.C. 112, first paragraph. Upon review of this "Future Work" paragraph, it does not appear to provide anywhere near the level of detail customary to meet 35 U.S.C. 112, first paragraph, and if submitted as a patent application, would likely receive rejections for not indicating that the inventor had possession of the future invention based on its own disclosure.

Al-Theneyan's "future work" is merely an invitation to continue their work in some possible directions, nothing more, nothing less, and should not preclude

those who solve those problems from obtaining proper protection for their own inventions.

**Request for Reversal or Remand**

Appellant respectfully submits that the final rejections are based on erroneous examination which relies upon improper Official Notice, reading Appellant's disclosure into the references, interpreting the references in contravention to ordinary meanings of terms, and failing to clearly set forth the reasons for the rejections.

Appellant respectfully requests reversal of the rejections, and allowance of claims 14, 40 and 41.

Respectfully Submitted,  
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**Claims Appendix**  
*per 37 CFR §41.37(c)(1)(viii)*

**Clean Form of Amended Claims**

Claims 1 - 13 (cancelled)

14. A computer-implemented grid computing control method comprising:  
receiving by a grid computing control system one or more grid resource self-reports from one or more self-reporting computing resources in a grid computing environment;  
receiving by the grid computing control system one or more job results from a grid resource job results manager system corresponding to jobs completed by the self-reporting grid computing resources;  
analyzing by the grid computing control system the received job results and the received self-reports against client-driven Service Level Agreement performance requirements corresponding to the completed jobs and determining one or more sub-ratings selected from a group comprising percentage of jobs completed, percentage of jobs completed within specified time constraints, an interactiveness rating, and a cost compliance rating;  
producing and updating a grid resource rating table having the sub-ratings according to a weighted analysis of the sub-ratings for each resource vendor;  
subsequently selecting by the grid computing control system an available grid resource server in the grid computing environment from a plurality of available grid resource servers according to the grid resource rating table; and  
assigning a subsequently requested job to the selected grid resource server wherein the selection and assignment is performed according to historical performance against client-driven performance requirements per the grid resource rating table.

Claims 15 - 39 (cancelled)

40. A computer program product comprising:

a computer readable storage medium;

first program instructions to receive by a grid computing control system one or more grid resource self-reports from one or more self-reporting computing resources in a grid computing environment;

second program instructions to receive by the grid computing control system one or more job results from a grid resource job results manager system corresponding to jobs completed by the self-reporting Online Transaction Processing computing resources;

third program instructions to analyze by the grid computing control system the received job results and the received self-reports against client-driven Service Level Agreement performance requirements corresponding to the completed jobs and determining one or more sub-ratings selected from a group comprising percentage of jobs completed, percentage of jobs completed within specified time constraints, an interactiveness rating, and a cost compliance rating;

fourth program instructions to produce and update a grid resource rating table having the sub-ratings according to a weighted analysis of the sub-ratings for each resource vendor;

fifth program instructions to, subsequently, select by the grid computing control system an available grid resource server in the grid computing environment from a plurality of available grid resource servers according to the grid resource rating table; and

sixth program instructions to assign a subsequently requested job to the selected grid resource server wherein the selection and assignment is performed according to historical performance against client-driven performance requirements per the grid resource rating table;

wherein the first, second, third, fourth, fifth and sixth program instructions are stored on the computer readable storage medium.



41. A grid computing control system comprising:

- a grid computing controller selected from a group comprising a microprocessor, programmable logic circuit, and custom integrated circuit, configured to perform a logical process of automatically dynamically assigning an Online Transaction Processing job to an available grid resource server based upon historical performance against grid processing job requirements driven by a client;
- receiver portion of the grid computing controller receiving one or more grid resource self-reports from one or more self-reporting computing resources in a grid computing environment;
- a Service Level Agreement accessor portion of the grid computing controller accessing one or more Service Level Agreements associated with the client;
- a job results receiver portion of the grid computing controller receiving one or more job results from a grid computing environment job results manager system;
- an analyzer portion of the grid computing controller, responsive to completion of an Online Transaction Processing job by a particular grid resource server, analyzing received job results and received self-reports from the particular grid resource server against the accessed Service Level Agreement, including determining one or more sub-ratings selected from a group comprising percentage of jobs completed, percentage of jobs completed within specified time constraints, an interactiveness rating, and a cost compliance rating;
- a report producer portion of the grid computing controller subsequently producing and updating a grid resource rating table having the sub-ratings according to a weighted analysis of the sub-ratings for each resource vendor; and
- a selector/assigner portion of the grid computing controller selecting an available grid resource server in the grid computing environment from a plurality of available grid resource servers according to the grid resource rating table, and assigning a subsequently requested job to the selected grid resource server.

Claims 42 - 43. (cancelled)

**Evidence Appendix*****per 37 CFR §41.37(c)(1)(ix)***

No evidence has been submitted by applicant or examiner pursuant to 37 CFR §§1.130, 1.131, or 1.132.

**Related Proceedings Appendix***per 37 CFR §41.37(c)(1)(x)*

No decisions have been rendered by a court or the Board in the related proceedings as identified under 37 CFR §41.37(c)(1)(ii).